

Listing of all claims:

1           1. (Previously Amended) An apparatus for  
2         detecting a seal on a moving film, comprising;  
3                 a force transmitter, disposed to transmit a force  
4         from the film, wherein the force is created when the film  
5         moves with respect to the force transmitter;  
6                 a force sensor disposed to receive the transmitted  
7         force and provide a force signal in response thereto; and  
8                 a controller, disposed to receive the force signal  
9         and provide a seal signal in response thereto.

1           2. The apparatus of claim 1, wherein the force sensor  
2         is an acoustic sensor.

1           3. The apparatus of claim 1, wherein the force sensor  
2         is a mechanical sensor.

1           4. The apparatus of claim 1, wherein the force sensor  
2         is a vibration sensor.

1           5. The apparatus of claim 1, further comprising an  
2         anvil disposed on a first side of a film path, wherein the force  
3         transmitter is disposed on a second side of the film path.

1           6. The apparatus of claim 1, wherein the force sensor  
2         is a piezoelectric sensor.

1           7. The apparatus of claim 5, wherein the force  
2         transmitter is a quill disposed near a path of the film.

1           8. The apparatus of claim 6, wherein the quill is  
2         rigid.

1           9. The apparatus of claim 7, wherein the quill is  
2 comprised of stainless steel.

1           10. The apparatus of claim 6, wherein the quill is  
2 angled in a downstream film path direction, relative to normal to  
3 the film path.

1           11. The apparatus of claim 10, wherein the quill  
2 includes a radius surface abutting the film path, and the quill  
3 is held against the film path by a spring force.

1           12. The apparatus of claim 5, wherein the controller  
2 includes an amplitude comparator that receives the force signal  
3 and an amplitude threshold.

1           13. The apparatus of claim 5, wherein the controller  
2 includes a rise-time comparator that receives the force signal  
3 and a rise-time threshold.

1           14. The apparatus of claim 1, wherein the controller  
2 includes a window circuit.

1           15. (Previously Amended)      A method for detecting a  
2 seal on a moving film, comprising;  
3                 creating a force when the film moves relative to a  
4 sensor;  
5                 providing a force signal responsive to the seal;  
6 and  
7                 detecting the force and providing a seal signal in  
8 response thereto.

1               16. The method of claim 15, further comprising  
2 transmitting a force from the film.

1               17. The method of claim 15, wherein providing the  
2 force signal includes detecting an acoustic signal.

1               18. The method of claim 16, wherein providing the  
2 force signal includes detecting a mechanical signal.

1               19. The method of claim 16, wherein providing a force  
2 signal includes sensing a vibration.

1               20. The method of claim 15, further comprising  
2 transmitting the force with a quill disposed near a path of the  
3 film.

1               21. The method of claim 15, wherein providing a seal  
2 signal includes comparing an amplitude of the force with a  
3 threshold.

1               22. The method of claim 21, wherein providing a seal  
2 signal includes making the comparison during a window.

1               23. The method of claim 22, wherein providing a seal  
2 signal includes comparing a rise-time of the force with a  
3 threshold.

1               24. (Previously Amended)      An apparatus for  
2 detecting a seal on a moving film, comprising;  
3               means for providing a force signal in response to  
4 the seal and a force, wherein the force is created when the  
5 film moves;

6                   means for detecting the force signal, coupled to  
7                   the means for providing a force signal; and  
8                   means for providing a seal signal in response to  
9                   the force signal, coupled to the means for detecting.

1                 25. The apparatus of claim 24, further comprising  
2                   means for transmitting a force from the film to the means for  
3                   detecting, coupled to the means for detecting.

1                 26. The apparatus of claim 25, wherein the means for  
2                   detecting includes means for detecting an acoustic signal.

1                 27. The apparatus of claim 25, wherein the means for  
2                   detecting includes means for detecting a mechanical signal.

1                 28. The apparatus of claim 25, wherein the means for  
2                   detecting includes means for detecting a vibration signal.

1                 29. The apparatus of claim 25, wherein the means for  
2                   providing a seal signal includes means for comparing an amplitude  
3                   of the force with a threshold.

1                 30. The apparatus of claim 29, wherein the means for  
2                   providing a seal signal includes means for making the comparison  
3                   during a window.

1                 31. The apparatus of claim 30, wherein the means for  
2                   providing a seal signal includes means for comparing a rise-time  
3                   of the force with a threshold.

1                 32. (Previously Amended)      A machine, comprising;

2                   a force transmitter, disposed to transmit a force  
3                   responsive to a seal on a bag, wherein the force is created  
4                   as the bag moves relative to the transmitter;

5                   a force sensor disposed to receive the transmitted  
6                   force and provide a force signal in response thereto;

7                   at least one upstream processing device, located  
8                   upstream of the force transmitter;

9                   at least one downstream processing device, located  
10                  downstream of the force transmitter; and

11                  a controller, disposed to receive the force signal  
12                  and provide a seal signal in response thereto.

1                 33. The apparatus of claim 32, wherein the force  
2                 sensor is a mechanical sensor.

1                 34. The apparatus of claim 32, further comprising an  
2                 anvil disposed on a first side of a film path, wherein the force  
3                 transmitter is disposed on a second side of the film path.

1                 35. The apparatus of claim 34, wherein the force  
2                 sensor is a piezoelectric sensor.

1                 36. The apparatus of claim 35, wherein the force  
2                 transmitter is a quill disposed near a path of the film.

1                 37. The apparatus of claim 36, wherein the quill is  
2                 angled downstream.

1                 38. The apparatus of claim 37, wherein the quill  
2                 includes a radius surface abutting the film path, and the quill  
3                 is held against the film path by a spring force.

1               39. The apparatus of claim 38, wherein the controller  
2 includes a window circuit.

1               40. The apparatus of claim 32, wherein one of the at  
2 least one downstream devices is registered to the seal.

1               41. The apparatus of claim 40, wherein one of the at  
2 least one downstream devices includes a knife.

1               42. The apparatus of claim 40, wherein one of the at  
2 least one downstream devices and the force transmitter are in a  
3 common tension zone.

1               43. (Previously Amended)           A method for processing  
2 a bag, comprising;  
3                      transporting the film from a first processing  
4                      device to a seal sensing location, and past the seal sensing  
5                      location;  
6                      providing a force signal responsive to the seal  
7                      and a force at the seal sensing location, wherein the force  
8                      is created by the seal moving;  
9                      detecting the force and providing a seal signal in  
10                  response thereto;  
11                  transporting the film to a second processing  
12                  device.

1               44. The method of claim 43, further comprising  
2 transmitting a force from the film.

1               45. The method of claim 44, wherein providing the  
2 force signal includes detecting a mechanical signal.

1           46. The method of claim 43, wherein providing a seal  
2 signal includes comparing an amplitude of the force with a  
3 threshold.

1           47. The method of claim 46, wherein providing a seal  
2 signal includes making the comparison during a window.

1           48. The method of claim 43, wherein providing a seal  
2 signal includes comparing a rise-time of the force with a  
3 threshold.